

Observations of Comet 1888 a (Sawerthal) made at the Royal Observatory, Greenwich.  
(Communicated by the Astronomer Royal.)

The observations were made with the East or Sheepshanks Equatorial, aperture 6.7 inches, by taking transits over two cross wires at right angles to each other, and each inclined 45° to the parallel of declination.

Comet 1888 a (Sawerthal).

Greenwich Mean Solar Time.	Observer.	—* R.A.			Corr. for Par. and Refraction in R.A.	—* N.P.D.			Corr. for Par. and Refraction in N.P.D.	No. of Comp.	Apparent R.A.			Apparent N.P.D.			Comp. Star.
h m s		h	m	s	s	°	'	''	''		h	m	s	°	'	''	
1888. April 18	HT.	15	44	15	-0'30	+4	5'80	-3	8'9	-4'8	4	22	52	40'40	70	56	50'1 a
18		15	44	15	-0'30	+3	9'05	-5	30'7	-4'9	4	22	52	40'35	70	56	42'0 b
18		15	51	43	-0'30	+4	8'75	+3	28'5	-4'1	2	22	52	41'55	70	56	32'3 c
26	HT.	15	16	4	-0'30	+1	4'90	-5	6'5	-4'4	6	23	13	34'00	65	39	22'8 d
26		15	16	4	-0'30	-2	25'43	-0	45'4	-4'1	6	23	13	34'27	65	39	24'1 e
26		15	16	31	-0'30	+3	28'85	-0	48'0	-4'1	2	23	13	33'75	65	39	31'0 f
26		15	16	31	-0'30	+3	7'90	-11	2'4	-4'8	2	23	13	33'50	65	39	26'1 g
29	L.	14	16	33	-0'30	+0	14'21	+0	16'2	-4'2	17	...	...	...	...	...	h
29		14	30	56	-0'37	+0	2'92	-8	13'2	-5'1	6	23	20	52'55	63	55	7'7 i
29		14	49	16	-0'30	+2	16'75	-2	11'4	-4'3	4	23	20	57'65	63	54	33'9 j
May 3	HT.	15	13	20	-0'30	-0	9'13	-0	0'5	-3'6	6	23	30	33'57	61	43	21'1 k
4	HT.	15	5	55	-0'30	+1	1'98	-4	1'8	-3'7	4	...	...	...	...	...	l
4		15	17	10	-0'30	-5	26'65	-3	28'5	-3'7	4	23	32	54'00	61	12	11'1 m
5	HT.	13	53	28	-0'30	+6	58'00	-1	5'0	-4'1	3	23	35	3'20	60	43	33'7 n
5		13	59	53	-0'30	+4	0'00	+5	45'1	-3'3	2	...	...	...	...	...	o
7	H.	13	28	15	-0'30	-0	6'30	+0	4'8	-4'1	1	...	...	...	...	...	p
10	T.	13	54	2	-0'30	-1	3'50	+3	32'6	-3'4	6	23	46	25'80	58	16	33'9 q

## Mean Places of Comparison Stars.

	Star's Name.	R.A., 1888 <sup>o</sup> .			N.P.D., 1888 <sup>o</sup> .	Authority
		h	m	s		
<i>a</i>	W.B. (2) XXII. 1087	22 48	35	64	70 59 53.7	Lamont.
<i>b</i>	W.B. (2) XXII. 1109	22 49	32	42	71 2 7.6	Lamont.
<i>c</i>	Arg. Zone + 18°, No. 5064	22 48	33	90	70 52 57.9	Lamont.
<i>d</i>	W.B. (2) XXIII. 219	23 12	30	00	65 44 22.8	Weisse's Bessel (2).
<i>e</i>	W.B. (2) XXIII. 291-2	23 16	0	72	65 40 2.6	Weisse's Bessel (2).
<i>f</i>	Arg. Zone + 24°, No. 4738	23 10	5	90	65 40 12.1	Rümker.
<i>g</i>	W.B. (2) XXIII. 169-70	23 10	26	61	65 50 22.4	Weisse's Bessel (2).
<i>h</i>	Arg. Zone + 25°, No. 4935	23 20	42		63 54	Bonn Observations, Vol. IV.
<i>i</i>	Arg. Zone + 25°, No. 4936	23 20	50	65	64 3 14.9	Bonn Observations, Vol. VI.
<i>j</i>	W.B. (2) XXIII. 350	23 18	41	87	63 56 38.5	Weisse's Bessel (2).
<i>k</i>	W.B. (2) XXIII. 621-2	23 30	43	60	61 43 13.7	Weisse's Bessel (2).
<i>l</i>	Arg. Zone + 28°, No. 4608	23 31	48		61 19	Bonn Observations, Vol. IV.
<i>m</i>	78 Pegasi	23 38	21	46	61 15 31.9	Greenwich 9-Year Catalogue.
<i>n</i>	W.B. (2) XXIII. 566	23 28	6	06	60 44 31.3	Weisse's Bessel (2).
<i>o</i>	Arg. Zone + 29°, No. 4969	23 31	3		60 38	Bonn Observations, Vol. IV.
<i>p</i>	Arg. Zone + 30°, No. 5015	23 39	36		59 33	Bonn Observations, Vol. IV.
<i>q</i>	Lalande 46809	23 47	30	12	58 12 52.9	Lalande.

*Notes.*

- April 26.—Nucleus only visible ; no trace of a tail could be seen in the strong moonlight and approaching daylight.
- May 3.—The comet became very faint towards the end of the series of observations ; tail visible at first.
- 4.—Comet very faint at last comparison.
- 5.—Comet not at all easy to observe ; tail traceable for 20'.
- 7.—This observation was made during a break in the cloud ; comet had a distinct nucleus, and a very perceptible tail.
- 10.—Comet faint, with long, straight, but very faint tail.

The observations are corrected for parallax and refraction. The initials HT., T., L., H. are those of Mr. Turner, Mr. Thackeray, Mr. Lewis, and Mr. Hollis respectively.

*Observation of Comet 1888 a (Sawerthal) with the Altazimuth.*

From an observation of Comet *a*, made on the morning of May 2, with the altazimuth, with the graduated face of the vertical circle left, the following position, corrected for parallax and refraction, was obtained :—

Greenwich Mean Solar Time.		Observer.		R.A.		N.P.D.	
1888.	h m s	h m s		h m s		° ' "	
May 1	13 34 35	T.		23 25 40.57		62 50 35.0	

*Observations of the Spectrum of Comet 1888 a (Sawerthal), made at the Royal Observatory, Greenwich.**(Communicated by the Astronomer Royal.)*

The comet was looked for on several mornings, but owing to the prevalence of cloud in the east before sunrise was only seen on three occasions.

On April 10 a momentary glimpse was caught of the comet between heavy clouds and through light cloud. The spectrum was of the last degree of faintness, and was supposed at the time to consist simply of the green band of the usual cometary spectrum, without any trace of a continuous spectrum. The observations on April 19 and May 3 render it probable that what was seen was simply the brightest part of the continuous spectrum.

On April 19 the comet was seen again, but still with great difficulty, and always through cloud; the daylight, too, had begun to be strong before the comet could be seen at all.

The spectrum of the comet was mainly continuous. The spectrum, as seen, was probably from the nucleus and immediate neighbourhood only, but, so far as it could be traced, was almost entirely of a continuous character. Two feeble bands were just glimpsed, nearly, if not quite, coincident with the green and yellow bands of the spectrum of the Bunsen flame. The blue band could not be quite satisfactorily made out in the spectrum of the comet, but there seemed some feeble brightening in its neighbourhood, that might be taken as an indication of its presence. Finally, a very fair direct comparison was obtained in the case of the green band, which left no doubt of its coincidence with the corresponding band of the spectrum of the Bunsen flame.

On May 3 the comet was seen again, this time in a clear sky; and its spectrum was found to be practically wholly continuous. The band spectrum was evidently very much feebler in proportion to the continuous spectrum than on April 19, for no trace of the bands in the yellow and blue could be detected, and the band in the green, though searched for very carefully with every variety of slit-width, could only be very faintly suspected, as a feeble local brightening of the continuous spectrum, from the envelope immediately surrounding the nucleus of the comet. The continuous spectrum ended rather abruptly at, or very near, D. The tail of the comet was traced in the finder as a straight beam of light for a considerable distance from the nucleus, and its spectrum could just be seen in the spectroscope, and apparently was, like that of the head, of a continuous character, differing only from it in being far more faint.

No measures could be obtained on either of the three dates of observation. The observations were made throughout by Mr. Maunder, using the single prism spectroscope mounted upon the 12·8-inch refractor.